

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A gear shift control device for a work vehicle in which an output shaft of an engine is connected to an input clutch that is arranged between the engine and a transmission, the gear shift control device being operable to control the transmission that includes gear shift clutches and is arranged on a power transmission path for the engine, the gear shift control device comprising:

~~a transmission arranged on a power transmission path for an engine and having gear shift clutches;~~

~~an input clutch arranged between the engine and the transmission on the power transmission path for the engine;~~

gear shift clutch control means for selecting a gear shift clutch in response to a gear shift command to switch from a gear shift clutch used before gear shifting to the selected gear shift clutch to be used after the gear shifting to cause an engine power to be transmitted to the selected gear shift clutch of the transmission to be used after the gear shifting via the input clutch; and

input clutch control means for controlling the input clutch ~~to be switched from a connected state to a power transmittable sliding state~~ so as to start a cut-off operation in a period of time from when a cut-off operation of the gear shift clutch used before the gear shifting is started to when a connecting operation of the selected gear shift clutch to be used after the gear shifting is ~~completed~~ completed, switching the input clutch from the connected state to a power transmittable sliding state, and maintaining the sliding state at least until the connecting operation of the gear shift clutch to be used after the gear shifting is completed.

2. (Previously Presented) The gear shift control device for a work vehicle according to Claim 1, wherein each of the gear shift clutches of the transmission includes a forward clutch to cause the vehicle to travel forward and a reverse clutch to cause the vehicle to travel in reverse; and

the gear shift clutch control means performs:

a control to select the forward clutch in response to the gear shift command to switch from the reverse clutch used before the gear shifting to the selected forward clutch to be used after the gear shifting; or

a control to select the reverse clutch in response to the gear shift command to switch from the forward clutch used before the gear shifting to the selected reverse clutch to be used after the gear shifting.

3. (Currently Amended) The gear shift control device for a work vehicle according to Claim 1, wherein the work vehicle has operating means for selecting the forward clutch or the reverse clutch according to an operating position and the gear shift clutch control means receives a gear shift command signal indicating whether the operating means has been operated to select either the forward clutch or the reverse clutch.

4. (Currently Amended) ~~The gear shift control device for a work vehicle according to Claim 1, comprising a pressure detector for detecting a clutch pressure of each of the gear shift clutches,~~ A gear shift control device for a work vehicle in which an output shaft of an engine is connected to an input clutch that is arranged between the engine and a transmission, the gear shift control device being operable to control the transmission that includes gear shift clutches and is arranged on a power transmission path for the engine, the gear shift control device comprising:

gear shift clutch controls means for selecting a gear shift clutch in response to a gear shift command to switch from a gear shift clutch used before gear shifting to the selected gear shift clutch to be used after the gear shifting to cause engine power to be transmitted to the selected gear shift clutch of the transmission to be used after the gear shifting via the input clutch;

input clutch control means for controlling the input clutch so as to start a cut-off operation of the input clutch in a period of time from when a cut-off operation of the gear shift clutch used before the gear shifting is started to when a connecting operation of the selected gear shift clutch to be used after the gear shifting is completed, switching the input clutch from the connected state to a power transmittable sliding state, and maintaining the sliding state at least

until the connecting operation of the gear shift clutch to be used after the gear shifting is completed; and

a pressure detector for detecting a clutch pressure of each of the gear shift clutches,

wherein the input clutch control means performs a control to reduce a clutch pressure of the input clutch to a predetermined pressure based on a clutch pressure of the gear shift clutch used before the gear shifting and/or a clutch pressure of the selected gear shift clutch to be used after the gear shifting detected by the pressure detector.

5. (Currently Amended) ~~The gear shift control device for a work vehicle according to Claim~~

~~1.~~ A gear shift control device for a work vehicle in which an output shaft of an engine is connected to an input clutch that is arranged between the engine and a transmission, the gear shift control device being operable to control the transmission that includes gear shift clutches and is arranged on a power transmission path for the engine, the gear shift control device comprising:

gear shift clutch controls means for selecting a gear shift clutch in response to a gear shift command to switch from a gear shift clutch used before gear shifting to the selected gear shift clutch to be used after the gear shifting to cause engine power to be transmitted to the selected gear shift clutch of the transmission to be used after the gear shifting via the input clutch;

input clutch control means for controlling the input clutch so as to start a cut-off operation of the input clutch in a period of time from when a cut-off operation of the gear shift clutch used before the gear shifting is started to when a connecting operation of the selected gear shift clutch to be used after the gear shifting is completed, switching the input clutch from the connected state to a power transmittable sliding state, and maintaining the sliding state at least until the connecting operation of the gear shift clutch to be used after the gear shifting is completed,

wherein the input clutch control means performs a control to reduce a clutch pressure of the input clutch to a predetermined pressure based on an elapsed time from a time at which a clutch chamber of the selected gear shift clutch to be used after the gear shifting is filled with pressure oil.

6. (Previously Presented) The gear shift control device for a work vehicle according to Claim 1, wherein the input clutch control means performs a control to reduce a clutch pressure of the input clutch to a predetermined pressure based on an elapsed time from when the gear shift command is generated.

7. (Currently Amended) ~~The gear shift control device for a work vehicle according to Claim 1,~~ A gear shift control device for a work vehicle in which an output shaft of an engine is connected to an input clutch that is arranged between the engine and a transmission, the gear shift control device being operable to control the transmission that includes gear shift clutches and is arranged on a power transmission path for the engine, the gear shift control device comprising:
gear shift clutch controls means for selecting a gear shift clutch in response to a gear shift command to switch from a gear shift clutch used before gear shifting to the selected gear shift clutch to be used after the gear shifting to cause engine power to be transmitted to the selected gear shift clutch of the transmission to be used after the gear shifting via the input clutch;
input clutch control means for controlling the input clutch so as to start a cut-off operation of the input clutch in a period of time from when a cut-off operation of the gear shift clutch used before the gear shifting is started to when a connecting operation of the selected gear shift clutch to be used after the gear shifting is completed, switching the input clutch from the connected state to a power transmittable sliding state, and maintaining the sliding state at least until the connecting operation of the gear shift clutch to be used after the gear shifting is completed.

wherein the input clutch control means performs a control to switch the input clutch from the connected state to the power-transmittable sliding state after a time when a clutch chamber of the selected gear shift clutch to be used after the gear shifting is filled with pressure oil.

8. (Previously Presented) The gear shift control device for a work vehicle according to Claim 1, wherein the input clutch control means restores the input clutch to an original connected

state from the power-transmittable sliding state after a time when a connecting operation of the selected gear shift clutch to be used after the gear shifting is completed.

9. (Currently Amended) A gear shift control method for a work vehicle in which an output shaft of an engine of the work vehicle is connected to an input clutch, an the input clutch and a transmission having gear shift clutches are arranged on a power transmission path for ~~an~~ the engine, and one of the gear shift clutches is selected according to a gear shift command to switch from a gear shift clutch used before the gear shifting to the selected gear shift clutch to be used after the gear shifting, so that ~~an~~ engine power is transmitted to the selected gear shift clutch of the transmission to be used after the gear shifting via the input clutch, the method comprising the steps of:

- (a) starting a cut-off operation of the gear shift clutch used before the gear shifting;
- (b) starting a cut-off operation of the input clutch to switching-switch the input clutch from a connected state to a power-transmittable sliding state; and
- (c) ~~completing a connecting operation of the selected gear shift clutch to be used after the gear shifting~~ maintaining the sliding state at least until the connecting operation of the gear shift clutch to be used after the gear shifting is completed; and
- (d) completing a connecting operation of the selected gear shift clutch to be used after the gear shifting.

10. (Currently Amended) The gear shift control method for a work vehicle according to Claim 9, comprising the steps of:

- (a) starting the cut-off operation of the gear shift clutch used before the gear shifting;
- (b) ~~(b)~~ starting a cut-off operation of the input clutch to switching-switch the input clutch from the connected state to the power-transmittable sliding state after a time when a clutch chamber of the selected gear shift clutch to be used after the gear shifting is filled with pressure oil; and
- (c) ~~completing the connecting operation of the selected gear shift clutch to be used after~~

~~the gear shifting~~maintaining the sliding state at least until the connecting operation of the gear shift clutch to be used after the gear shifting is completed; and

(d) completing the connecting operation of the selected gear shift clutch to be used after the gear shifting.

11. (Currently Amended) The gear shift control method for a work vehicle according to Claim 9, comprising the steps of:

(a) starting the cut-off operation of the gear shift clutch used before the gear shifting;
(b) starting a cut-off operation of the input clutch to switchingswitch the input clutch from the connected state to the power-transmittable sliding state;

(c) maintaining the sliding state of the input clutch;
(e)~~(d)~~ completing the connecting operation of the selected gear shift clutch to be used after the gear shifting; and

~~(d)~~(e) restoring the input clutch from the power-transmittable sliding state to an original connected state after a time when the connecting operation of the selected gear shift clutch to be used after the gear shifting is completed.